NOTES ON OCEANOGRAPHY.

BY

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ANTARCTIC NAME LIST.—In the *Deutsche Rundschau für Geographie und Statistik*, *Vol. XXI*, *No. 7*, *p. 309*, there is an excellent list of the geographical names of the South Polar regions, giving their derivation or origin. This list is of great interest at the present time, on account of the attention which is being paid to this part of our globe. The only suggestion which might be made is that the names should have been arranged alphabetically instead of under the separate geographical groups to which they belong.

COLOR OF SEA WATER.—In the *Proceedings of the Royal Society of Engineers*, Mr. John Aitken has given a theory of the color of sea water, based upon the principle that sea water is a blue liquid. According to his theory, the green tint observed in water near land is to be explained by the presence of fine yellow particles in suspension.

Mr. R. Threlfall attacks this view in *Nature*, *March 16*, *1899*, showing as the results of a series of experiments, made on board ship every day in a voyage from Sydney to Marseilles, using the apparatus described by Mr. Aitken, that the effect produced by the scattering of light by small particles has apparently little to do with the change of color. He suggests that the sea may dissolve a sufficiency of yellow coloring matter from living or dead sea weed to account for the greenish tint.

Mr. Aitken replies in *Nature*, *March 30*, *1899*, that while it is pointed out that yellow particles will make the change in color, they are not stated to be the exclusive cause of the change. He goes on to show that the examples he gave lead to the conclusion that the addition of yellowish water from lakes and rivers, even if clear of sediment, will produce a change in color in the sea water.

DRIFT BOTTLES AND SURFACE CURRENTS.—The elaborate paper of Dr. Schott upon the subject of "Flaschenposten," based upon the material in the possession of the Deutsche Seewarte, has been critically discussed in *Nature* of April 6, 1899, with respect to the limited nature of the information to be obtained in this way and

the great risk of misinterpreting the results. A specimen of the charts is also reproduced.

While the justness of the conclusions of Dr. Schott is not questioned, as far as they go, they are open to criticism.

In an open sea—*i. e.*, clear of land influences—surface currents follow the direction of the wind, and the float takes the course common to both.

Near the land, three factors control the direction of the current: the form of the coast line; the prevailing wind; the differences of level, caused by on and off shore winds, variations in density, etc. The conclusion is reached that the relation of the movement of the float to that of the wind and the surface water is really a function of the strength of the wind, the sea disturbance, and of the density of the water. For, while a float may make headway against the wind, any cyclonic disturbance may remove the float bodily to another member of the oceanic circulation; and the record would show these two currents as a continuous stream.

The reviewer regards all deductions as to the speed of a current from such records as practically worthless. He uses as an example the puzzling course of drift currents, adducing the illustration of the track of the *Fram* as a generalized instance. Such being the case, the wind is suspected of having a considerable share in the high velocities obtained from such observations.

We do not know enough of the currents, or of the modifications to which they may be subjected, to theorize very extensively on such a basis of facts. Great caution is necessary, and the uncertainty becomes greater in channels and enclosed seas.

Such observations, it seems, will only yield valuable results when taken in connection with systematic observations by more precise methods, such as those obtained in the study of the distribution of temperature and salinity.

Periodic Tides.—Mr. W. Bell Dawson in a letter to *Nature* (Apr. 20, 1899) complains that Prof. Duff of Perdue University has done him scant justice in the description of the secondary tidal undulations upon the eastern coast of Canada. He then proceeds to describe the character and extent of the works of the Tidal Survey, which must be recognized as excellent.

Prof. Duff in the same number disclaims any harmful intentions in the most ingenious manner, and sums up his statement of the explanation of these phenomena:

1. The oscillations are regular where the basin is fairly regular.

2. They are irregular in markedly irregular basins.

3. The period is determined by the dimensions of these basins, and can be calculated from these dimensions.

4. The cause of the initial disturbance is probably atmospheric.

THE TIDES AND KINDRED PHENOMENA IN THE SOLAR SYSTEM, BY PROF. G. H. DARWIN.—An appreciative review and summary of the contents of this most excellent book appears in the *Geographical Journal*, Vol. XIII, p. 630.

The book is the substance of a course of lectures on the Tides delivered at the Lowell Institute in Boston in 1897.

It is to be hoped that this volume will find its way into the hands of more of our teachers of geography, to whom this "long-suffering" subject has been more or less of a bugbear. It summarizes the profound work of Lord Kelvin and the author in clear and popular language. No subdivision of the modern text book on geography is so hopelessly behind the times as that upon the tides, and no more seasonable or luminous exposition of the subject is to be found elsewhere.

THE VALDIVIA VOYAGE.—In the *Geographical Journal* (Vol. XIII, p. 640) is an extended account of the German Deep Sea Expedition on the *Valdivia*, as obtained in the official report published in the Deutsche Reichs-Anzeiger of March 25th, 1899. This abstract gives in very concise form the narrative of the voyage and the principal scientific results.

The greatest depth obtained was 3,134 fathoms, and the temperature at this point was 31°.4 F. (Lat. 58° 5′ S. and Long. 35 °54′ E.).

The Sigsbee sounding apparatus was used most successfully in all the work.

Aside from the determination of the depths, observations were made upon the temperature and chemical conditions of the water. The zone of rapid change in temperature of the water occurs at from 100 to 150 fathoms, showing that the surface heating effect of the tropics is a comparatively superficial one. The biological investigations seem to show that while the number of forms in the Antarctic falls short of that in the warmer regions, there is a great amount of life in these southern waters.

Interesting results were obtained with the closing net at intermediate depths. From the surface to 1,000 fathoms there is a considerable amount of life, which rapidly decreases from this point to the bottom, but even at the bottom living forms were found. This

goes to prove that no parts of the ocean depths are devoid of life. Some forms, however, prefer the superficial while others are found in the deeper layers.

The plankton of the Antarctic was characterized by an abundance of diatoms, and a corresponding predominance of diatom ooze at the bottom.

The maximum of plankton vegetation occurs at 40 fathoms, but living forms were found at from 150 to 200 fathoms.

The northern limit of the diatom region in the Atlantic and Indian oceans is found at about 40° S., and corresponds with a sudden fall of temperature. Forms characteristic of warmer regions were found as far south as 50°, but they disappear beyond this point.